DOE HANDBOOK

GUIDE TO GOOD PRACTICES FOR TRAINING AND QUALIFICATION OF INSTRUCTORS

U.S. Department of Energy
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FOREWORD

The purpose of the *Guide to Good Practices for Training and Qualification of Instructors* is to provide contractor training organizations with information that can be used to verify the adequacy and/or modify existing instructor training programs, or to develop new training programs. DOE contractors should not feel obligated to adopt all parts of this document. Rather, they can use the information contained in these good practices to develop programs that are applicable to their facility.

This guide applies primarily to those who conduct and support technical instruction in the areas of facility operations, maintenance, and technical support. However, human resource development (HRD) instructors may also find its content useful. While this document treats an instructor's technical and instructional competence separately, it is the combination of these factors and interpersonal skills that produces a highly effective instructor.

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may improve this document should be sent to:

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by letter or by using the self-addressed Document Improvement Proposal (DOE F 1300.3) appearing at the end of this document.

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1. SCOPE

1.1 Purpose

This guide contains good practices for the training and qualification of technical instructors and instructional technologists at DOE reactor and non-reactor nuclear facilities. It addresses the content of initial and continuing instructor training programs, evaluation of instructor training programs, and maintenance of instructor training records.

1.2 Background

The *Guide to Good Practices for Training and Qualification of Instructors* was developed from three principal sources:

- Commercial nuclear power industry guidelines for instructor training and qualification
- Mid-Atlantic Nuclear Training Group (MANTG) Generic Instructor Task List
- A tabletop analysis conducted to identify instructional competencies representative of those required by DOE's Training Accreditation Program (TAP) objectives and criteria.

The TAP objectives and criteria have been revised since this guide was originally developed. They are now consistent with the objectives and criteria contained in *DOE-STD-1070-94 Guidelines for Evaluation of Nuclear Facility Training Programs* which establishes the standards by which training programs should be evaluated against. The competencies in this guide are representative of those required by the revised objectives and criteria of the accreditation program and DOE-STD-1070-94.

1.3 Application

Training organizations should use this guide as a means of cross-checking to assist them in ensuring that the necessary elements are contained in their instructor training programs. This guide should also be used by facilities as they develop instructor training programs to comply with the requirements of DOE Orders and proposed rulemaking initiatives in DOE.

1.3.1 Discussion

The recommended instructor training programs are based on qualification levels. The following levels are addressed:

- •   On-the-Job Training (OJT) Instructor
- •   Classroom Instructor/Trainer
- •   Instructional Technologist.

Depending on the size and complexity of a facility's training organization, additional instructor qualification levels (such as Simulator or Laboratory Instructors) may be necessary. Appendix A is an example Trainer Classification Model which lists six qualification levels.

2. DEFINITIONS

Exception is the release of an individual from portions of a training program through prior education, experience, training, and/or testing.

Experience (Instructional) is assignment in a training/instructional position with responsibility for designing, developing, presenting, and/or evaluating training activities.

Instructor is an individual who presents classroom, laboratory, on-the-job, or simulator instruction, or one who develops training programs and materials, and/or evaluates trainees.

Instructor Qualification is the process of determining and verifying that individuals meet the instructional and technical competence qualification criteria for a specific instructor qualification level.

Job Analysis is a systematic method used in obtaining a detailed listing of the tasks of a specific job.

Learning Objective is a statement specifying measurable behavior that a trainee should exhibit after instruction, including the conditions and standards for performance.

Lesson Plan is an instructor's document that outlines instructor and trainee activities, learning objectives, lesson content, and resources necessary for the consistent conduct of training.

On-the-Job Training is formal training that is conducted and evaluated in the work environment.

Operational Evaluation is a documented evaluation of an individual's knowledge and skills. The operational evaluation is a facility walk-through that may include system and/or component operation, or simulation of operations, during which the candidate is observed and questioned regarding procedures, safety implications, and technical safety requirements or operational safety requirements as applicable.

Qualified is the satisfactory completion of a training program based on knowledge, skills, and abilities that are necessary for performance of assigned responsibilities.

Self-Paced Instruction (SPI) includes a number of forms of instruction in which the pace of training is controlled by the trainee and guided by the program materials. SPI does not require the full-time presence of an instructor. Students study on their own and learn at their own pace.

Subject Matter Expert (SME) is an individual qualified or previously qualified and experienced in performing a particular task. A subject matter expert may also be an individual who by education, training, and/or experience is a recognized expert on a particular subject, topic, or system.

Systematic Approach to Training is an approach to training which is based on tasks and the related knowledge and skills required for competent job performance. A systematic approach to training consists of the following phases:

> **Analysis Phase** identifies training requirements for a specific job position through the use of needs analysis, job analysis, and task analysis.

> **Design Phase** uses information collected during the analysis phase to select training settings, establish a training program development plan, and write specific learning objectives and test specifications that guide the development of all training materials and strategies.

> **Development Phase** uses the results of the design phase to select appropriate instructional methods and develop training materials.

> **Implementation Phase** consists of activities related to resource allocation, planning and scheduling, and the conducting and documenting of training.

> **Evaluation Phase** focuses on the effectiveness of each of the other phases.

Task is a well-defined unit of work having an identifiable beginning and end which is a measurable component of the duties and responsibilities of a specific job.

Task Analysis is the systematic process of examining a task to identify knowledge, skills, and abilities required for successful task performance.

Training is instruction designed to develop or improve job performance.

Training Program is a planned, organized sequence of activities designed to prepare individuals to perform their jobs, to meet a specific position or classification need, and to maintain or improve their performance on the job.

Training Setting is the environment in which training is conducted. Examples of training settings include classroom, laboratory/workshop, on-the-job, simulator, and self-paced instruction.

Training Supervisor is the individual responsible for day-to-day training activities, including scheduling, assigning, and evaluating instructors.

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3. INSTRUCTOR QUALIFICATION REQUIREMENTS

Qualification requirements should be established and documented for all facility and subcontract personnel, including "occasional/casual" instructors who perform training activities. (An occasional or casual trainer is an individual who only instructs several times a year; training is not a part of his/her job description.) These requirements should be based on instructor qualification levels, and should address instructional competence, technical competence, and applicable interpersonal skills. All subcontract instructors, both short-term and long-term, should meet the qualification requirements for the subjects they teach and/or develop.

Instructor trainees who are not fully qualified, as well as occasional instructors, should have limited participation in instructional activities. These individuals should perform assignments under the direct supervision of a qualified instructor or a training supervisor. All instructor trainees who are assigned instructional activities should be formally evaluated by a qualified instructor or a training supervisor.

On a case-by-case basis, determined by testing or experience, an instructor trainee may be granted an exception to specific training program requirements. If an instructor trainee can demonstrate mastery of some/all of the course learning objectives prior to the training, an exception is warranted. Administrative procedures should be developed that allow training management the option of releasing such an individual from portions of a qualification program's requirements. All exceptions granted should include a written justification.

Records formally documenting exceptions, the training provided, and the qualification(s) achieved for each member of the training staff should be maintained in accordance with Section 8 of this guide.

3.1 Instructional Competencies

A job analysis for a DOE facility's instructors and instructional technologists is not required. However, it is recommended that each facility analyze its work activities to ensure that training-related tasks and their associated knowledge and skills are identified and documented for each instructor qualification level. Appendix B contains a generic instructor job analysis survey form that may be used or modified for this analysis. Analysis results should be compared to the facility's instructor training programs to verify that required knowledge (at the proper cognitive level) and skills are provided in the content of each program. Further, these analyses should be used to establish

entry-level requirements (education, training, and work experience) for each instructional qualification level.

The knowledge and skills developed by the facility's instructor training programs should also be compared with the representative instructional competencies identified in Appendices C, D, E, and F of this guide. This comparison should help to verify the adequacy, or identify deficiencies in the facility's analyses and should also identify generic competencies which may not be needed in facility-specific training programs.

The competencies listed in Appendices C, D, E, and F were identified by tabletop analysis of TAP objectives and criteria, the DOE Instructor Training Course, and a generic instructor task list from the commercial nuclear power industry. As a result of this analysis, some competencies were written at the task level and some at the task element level. By providing competencies written at the task element's knowledge and/or skill level, the need to perform additional analysis is minimized. Competencies that are identified as applicable to a specific instructor training program should be rewritten in the form of terminal and enabling learning objectives.

In all cases, programs should be in place to develop the specific knowledge and skills required for each instructor's qualification level. It is recommended that if a facility does not conduct its own analysis of training-related activities, the content of its instructor training programs should be initially based on this guide and subsequently refined using a systematic evaluation process.

3.2 Technical Competencies

Training staff who perform as instructors in the development, presentation, or evaluation of technical topics should possess technical qualifications consistent with their assignments. Technical qualifications should include theoretical and practical knowledge as well as practical work experience at or above the level that is required of the trainee population. Instructors who initially lack practical work experience should complete portions of operator/technician/craft training programs related to the topics taught. These instructors should thoroughly understand the subject matter and its relationship to overall facility operation.

Each facility should establish written procedures that stipulate what these technical qualifications will be, to whom they apply, and how they may be attained for each instructor qualification level. For

example, instructors at DOE Category A reactor facilities who teach subjects such as technical safety requirements, operating practice, and control manipulations to certified reactor operators and senior reactor operators should have received senior reactor operator (or equivalent) training. Instructors who teach integrated facility response at DOE non-reactor nuclear facilities may also need facility operator (or equivalent) training.

Table 1 presents specific trainee groups and lists fundamental and facility-specific knowledge, experience, and qualifications appropriate for instructors of each group. The table suggests qualification requirements for instructor technical competency. Facilities should use the information provided in Table 1 and their facility-specific instructor analysis data to determine the technical qualification requirements for instructional positions.

TABLE 1

Suggested Instructor Technical Qualifications

Trainees	Subjects Taught	Instructor Qualifications

Operator/ Technician (O/T)
  Reactor
  Non-reactor
 or
Shift Supervisor/ Shift Manager (SS/SM)
 or
Technical Staff (TS)
	Academic/fundamental subjects	Successful completion of training/education in subjects being taught at or above the level to be achieved by the trainees, OR
		
		Training or experience that provides the instructor with knowledge of the duties and responsibilities of the trainees.

	Generic nuclear processes	O/T qualification for the facility, OR Successful completion of O/T training (including simulator, if applicable) for a facility of the same type.
	Facility-specific technical information and applied fundamentals	O/T training or qualification for the facility technical information (including simulator, if applicable) for the trainee's facility, OR For instructors without facility-specific experience, formal training should be completed that emphasizes operations and watch standing practices, shift turnover procedures, use of normal and emergency facility procedures, and normal facility evolutions.
RO & SRO	Facility-specific technical and integrated plant information such as technical safety requirements, control manipulations, and operating practice	SRO qualification or equivalent training

TABLE 1 (Continued)

Suggested Instructor Technical Qualifications

Trainees	Subjects Taught	Instructor Qualifications
Technicians from:	Fundamentals and facility technology	Demonstrated knowledge and skills in the subjects being taught at or above the level to be achieved by trainees, as evidenced by previous training/education and through job performance, AND
Mechanical Maintenance		
Electrical Maintenance		Training or experience that provides the instructor with knowledge of the duties and responsibilities of the trainees.
Instrument and Control		
Chemistry		
Radiological Protection	Facility-specific	Demonstrated knowledge and skills in the subjects being taught at or above the level to be achieved by the trainees, as evidenced by previous training/education and through job performance, AND
		Completion of all qualification requirements for the senior-level position or duty area of instructional responsibility at the trainee's facility or a similar facility, AND
		Training or experience that provides the instructor with knowledge of the duties and responsibilities of the trainees.
Instructors	Fundamental or advanced instructional skills training	Demonstrated knowledge and skills in the subjects being taught at or above the level to be achieved by the trainees, as evidenced by previous training/education and through job performance.

3.3 Interpersonal Skills

The ability to provide effective training is significantly influenced by the interpersonal skills of the instructor. Interpersonal skills (sometimes referred to as "soft skills") needed by instructors may be identified through observations or interviews with skilled instructors. Trainee feedback on instructor style and delivery (usually highly subjective), may also provide insight to desirable interpersonal skills. Many of these skills are contained in managerial training courses. It is important that these skills are identified and included in the instructor training programs.

The instructor has the pivotal role in the quality of training. The instructor's communication skills can significantly impact instructional effectiveness. Instructors should possess strong listening and speaking skills. Other skills include the ability to listen to questions, to phrase questions that stimulate thought, and to deal effectively with conflict.

The ability to influence trainee behavior is closely related to the instructor's motivational skills and personal example. The demeanor of the instructor is as important to the quality of the instruction as the lesson content and materials. Since trainees tend to model their actions after instructors, it is essential that instructors demonstrate leadership qualities, convey a positive attitude toward training, and promote professionalism in the work environment. Use of these interpersonal skills is the mark of an effective instructor.

4. INITIAL INSTRUCTOR TRAINING

Programs for initial instructor training should prepare individuals to carry out all duties associated with their respective instructor qualification level. The content of courses designed for each instructor qualification level should be based on a comparison of existing programs to either a job analysis (preferred method) or the applicable contents of this guide.

The initial instructor training described in this section is divided into three subsections - Instructional Basics, Instructor Qualification Levels, and Technical Skills Training.

4.1 Instructional Basics

All facility personnel responsible for technical training should complete an instructional basics training course. Training in instructional basics provides a common background for all facility instructors regardless of their instructor qualification level.

Content for an instructional basics training course may be determined by grouping the knowledge and skills identified during the analysis of the various instructional activities that are necessary to support facility training programs. See Appendix C for suggested representative competencies.

4.2 Instructor Qualification Levels

For the purpose of discussing different competencies, this guide divides initial instructor training into the following three qualification levels:

- On-the-Job Training (OJT) Instructor
- Classroom Instructor/Trainer
- Instructional Technologist.

Initial instructor training should develop the necessary instructional competencies to deliver training, or in the case of the instructional technologist, to design/develop effective training efficiently. To accomplish this objective, it is essential that training which is based on the instructor's qualification level and at the appropriate degree of comprehension or learning be provided to all personnel who perform training tasks regardless of their job title.

As you review Appendices C, D, E, and F, certain competencies may appear to be repeated. These competencies are required at different levels of comprehension based on the instructor's qualification level. For instance, the concept of learning objectives should be introduced in instructional basics training. An OJT instructor should know that learning objectives must be clear, concise, and correctly sequenced to provide effective training. The classroom instructor should know what was required of the OJT instructor and should be able to describe the factors that affect the proper sequencing of objectives. The instructional technologist should possess the competencies of the other two instructors (on this specific topic) and be able to develop learning objectives, group them by training setting, and effectively sequence them.

4.2.1 OJT Instructor Training

The OJT instructor is typically a senior craftsman/operator/technician, subject matter expert (SME), or a foreman/supervisor who conducts formal one-on-one training and performance testing. A training course for the OJT instructor should emphasize the "how to" rather than the "why"; however, some "why" should also be included. The OJT instructor is not normally expected to develop training materials, but as an SME he/she should be directly involved in assisting the instructional technologists as they develop and modify these materials. OJT instructors should have a basic working knowledge of the concepts of a systematic approach to training. See Appendix D for suggested competencies which are representative of those needed by an OJT instructor. Additional information regarding OJT is contained in the *DOE-STD-1012-92 Guide to Good Practices for On-the-Job Training*.

4.2.2 Classroom Instructor/Trainer Training

The classroom instructor/trainer is typically an individual who works part-time to full-time as an instructor. This title covers a broad range of instructors varying from a line organization SME -- working part-time as a classroom instructor using instructional materials and strategies developed by others-- to an individual who performs most of the duties of an instructional technologist. The classroom instructor should have a working knowledge of the concepts of a systematic approach to training. A training course for the classroom instructor should emphasize the "how to" and the "why." It is not necessary to have completed OJT instructor training to qualify as a classroom instructor. See Appendix E for suggested competencies which are representative of those needed by a classroom instructor.

4.2.3 Instructional Technologist Training

The instructional technologist typically designs, develops, and evaluates training courses and instructional materials based on a systematic approach to training. They may also provide formal classroom instruction if qualified. The training program for instructional technologists should be designed to build on the competencies developed by instructional basics training, OJT instructor training, and classroom instructor training. See Appendix F for suggested competencies which are representative of those needed by an instructional technologist.

4.3 Technical Skills Training

Technical qualification should be based on pre-established written standards that describe the appropriate level of technical expertise and proficiency required in specific subject areas (see Table 1). Personnel who are assigned instructional duties in technical training programs may need additional job-related knowledge and skills to complete their technical qualifications. Successful completion of all or selected portions of the initial operator/technician/craft training programs may be required to provide the necessary knowledge and skills. Methods for verifying technical competence may include the review of documentation that supports prior education and experience, operational evaluations, and oral/written examinations. Changes or upgrades to technical qualifications that enable personnel to perform training activities in additional areas should be verified in a similar manner and approved by the responsible manager.

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5. INSTRUCTOR QUALIFICATION

Qualification for all levels of instructors should be documented by the responsible manager's written endorsement of the satisfactory completion of initial instructor training and qualification requirements. Guidance (administrative procedures) should be developed to establish the criteria for technical and instructional qualification for all instructional personnel, including subcontractors. Guidance that describes the process for progressing to higher instructor qualification levels, frequency and renewal of qualification, and personnel record keeping should also be established.

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6. CONTINUING INSTRUCTOR TRAINING

Continuing training that maintains and improves instructional and technical skills should be provided following initial instructor qualification. All instructors should be evaluated at least annually by training management or a training supervisor. These evaluations and any necessary corrective measures should be documented as identified in Section 8. Continuing training in instructional skills should focus on correcting weaknesses identified by instructor evaluations and the development of desired competencies. Continuing training in technical skills should maintain and improve those skills necessary to provide effective instruction.

6.1 Instructional Skills Continuing Training

Activities that maintain and improve instructional skills may be conducted in group settings (lecture/discussion, role-playing methods, etc.), or may be accomplished through self-paced instruction and one-on-one sessions with peer instructors. Continuing instructional skills training should be provided to all personnel with training assignments. Continuing training requirements may be satisfied by attending or instructing the sessions. Continuing training requirements may also be met by completing applicable seminars or courses offered by outside consultants or academic institutions. Continuing training should be formally tracked and evaluated for its contribution to staff instructional effectiveness. Results should be documented as identified in Section 8.

Subjects appropriate for instructional skills continuing training may include the following:

- •   Refresher topics from initial instructional skills training
- •   New and advanced instructional techniques and methods
- •   Changes in regulations, standards, and procedures
- •   Organizational changes that may affect job responsibilities and interrelationships
- •   Performance deficiencies identified during instructor evaluations
- •   Industry trends and generic problems identified by assist and review visits.

6.2 Technical Skills Continuing Training

Training that will maintain and develop technical skills and ensure knowledge of job responsibilities should be provided to all personnel who act as technical instructors. This training should include attending or instructing applicable portions of the operator/technician/craft continuing training and structured in-facility time observing and/or participating in appropriate activities. In-facility activities should be planned in advance using established objectives and should consider current facility opportunities.

Instructors who provide facility-specific training should be kept current on facility and industry events and changes. Generic knowledge deficiencies and performance weaknesses should be included as continuing training topics. Any instructor with specific technical skill deficiencies should receive training to correct the problem(s).

Instructors at DOE Category A reactors who teach subjects such as technical safety requirements, operating practice, and control manipulations to certified reactor operators and senior reactor operators should receive the continuing training necessary to maintain their technical skills at, or equivalent to, the senior reactor operator level. This training should include portions of the senior reactor operator continuing training, completing specific in-facility activities, and spending appropriate time (acting as a member of an operating crew) on the simulator. Structured in-facility time should maintain the instructor's familiarity with facility configuration, watchstation requirements and practices, and procedural and administrative guidance.

Instructors who teach integrated facility response at DOE non-reactor nuclear facilities should receive the continuing training necessary to maintain their technical skills at, or equivalent to, the senior operator level.

Instructors of certified reactor operators and senior reactor operators who instruct topics other than those listed above, and instructors of other facility operators (both reactor and non-reactor), should maintain and develop the technical skills necessary to perform their job. These instructors should keep abreast of facility administrative practices and be familiar with the education and experience level of their trainee population. They may accomplish this by attending operations meetings and observing incumbent work activities.

Maintenance, chemistry, and radiological protection instructors should attend technical continuing training. They should also maintain familiarity with facility configuration, technician or craft practices, procedural and administrative guidance, and analytical or maintenance equipment through meeting attendance, and appropriate formal and informal communication. Additionally, instructors may improve their technical skills through attending industry training/professional workshops and seminars.

6.3 Professional Development

Each facility should establish activities that promote the professional growth of the training staff. These activities should provide a means of career development to ensure that personnel remain motivated in their current assignments. They should also provide the staff the opportunity to increase their contribution to the facility.

Industry good practices that can enhance professional growth include management by objectives and individual development plans. These approaches link individual performance to training department and facility goals, and can provide benefits to both the organization and the individual staff member. Professional growth opportunities may be identified from sources such as facility human resource groups or surveys of the training staff. Professional development activities may include the following:

- Cross-assignments between training and technical areas
- Expanded lead instructor activities such as providing guidance to work groups and subcontractors
- Authoring training procedures and other training documentation
- Assignments to training department problem-solving and decision-making task forces
- Participation in operations committees (training review committees, design review groups, procedural review groups, etc.)
- Participation in training associations and training-related workshops
- Company-funded enrollment in college vocational/educational programs
- Active participation in professional organizations related to technical areas
- Membership in professional training organizations (American Society of Training and Development [ASTD], National Society for Performance and Instruction [NSPI], etc.).

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7. EVALUATION OF INSTRUCTOR TRAINING PROGRAMS

In order to establish and maintain effective instructor training programs, a periodic or continuing evaluation of each program is necessary. The frequency of these course evaluations should change over time. Following initial training program development, evaluation on a three to six month period may be required. After this initial period of evaluation and course modification, evaluations should be conducted on a one to two year frequency.

Evaluation relies on effective two-way communication between the instructional technologists, the course instructors, the training supervisors, and the instructor trainees. Evaluations should encourage program updating and guide program improvements. Program evaluations should include the following items:

- Trainee examination (evaluation) results from the instructional basics and qualification level-specific instructor training
- Task-based feedback from former trainees to assess program effectiveness
- Post-training surveys of training supervisors to assess adequacy of program content
- Instructor performance evaluations by trainees, training supervisors, and appropriate line management
- Deficiencies noted in other evaluations and the resulting corrective actions
- Review of DOE and industry "guideline/good practices documents"
- Review of competency lists versus content of current instructor training programs.

Changes in program content, instructional materials, training methods, examination techniques, training facilities, or instructional staff should be identified and assigned to training management representatives for action. Responsibility for tracking corrective actions should also be assigned.

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8. PROGRAM RECORDS

Auditable records of each individual's participation and performance in or exception(s) granted from the training program(s) (instructional and technical as appropriate) should be maintained. Individual training records should include the following (as appropriate):

- Verified education, experience, employment history, and most recent health evaluation summary
- Training programs completed and qualification(s) achieved
- Latest completed checklists, graded written examinations (with answers corrected as necessary or examination keys) and operational evaluations used for qualification (this requires controlled access to training records to maintain examination security)
- Lists of questions asked and the examiner's overall evaluation of responses on oral examinations
- Correspondence relating to exceptions granted to training requirements (including justification and approval)
- Records of qualification for one-time-only special tests or operations
- Attendance records for required training courses or sessions.

A historical record that documents initial qualification on each position qualified should be maintained as part of individual training records. For example, if an instructor is initially qualified in 1986, the record should contain the date and name of the qualification. If more than one qualification is achieved and maintained, the individual training record should contain documentation to that effect.

Completed examinations, checklists, operational evaluations, etc., for presently held technical qualification(s) should be maintained in the record. (Some facilities may prefer to maintain a separate file of completed examinations with answer keys for each individual.) When an individual holds qualification in multiple positions, records that support current qualifications for each position should be maintained. Duty area or task qualification should be documented using a similar method (for facilities that use duty area or task qualification instead of position qualification). Functional supervisors should have access to qualification records, as necessary, to support the assignment of work to qualified personnel.

Upon requalification, records that support the previous technical qualification may be removed from

the record and replaced with the information documenting present qualification. Superseded information should be handled in accordance with procedures contained in *DOE 1324.5B, Records Management Program*.

In addition, records of the training programs (including an audit trail documenting the development and modifications to each program) and evaluations of the effectiveness of those programs should also be maintained.

APPENDIX A

EXAMPLE TRAINER CLASSIFICATION MODEL

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TRAINER CLASSIFICATION MODEL

REPRESENTATIVE JOB TITLES		REPRESENTATIVE JOB DESCRIPTION	REPRESENTATIVE COURSE TITLES	REPRESENTATIVE COMPETENCIES
Manager of Training and Development Program Leader	LEVEL VI	A. An administrator or manager who plans and directs the work of subordinate trainers. Functions as an employee development/problem solving consultant where training is a possible alternative to achieve an organizational goal. Does training cost estimating and training proposals. Evaluates training results and trainers. Provides or arranges for materials, outside consultants, etc. B. Preparation for this position includes all those expectations preceding as well as training management courses emphasizing program planning and evaluation, training research, and various generically related management/administration courses that go beyond directing people and include organizational development. Advanced degree. (1)	Research Methods Program Planning and Evaluation Administration of Occupational Education Personnel Management Organizational Development	Develop yearly and multi-year plans and budgets. Select competent staff, control resources, supervise staff, motivate, schedule activities, keep records, maintain public relations.
Course Designer Training Analyst Lead Instructor/Coordinator	LEVEL V	A. A senior, experienced trainer who functions as a lead trainer. Develops curriculum, may teach and mentor new trainers, teaches advanced coursework. Does assessment and evaluation training. B. Significant training/teaching experience. advanced coursework in learning theory, instructional design, needs research, front-end analysis. Beginning management orientation. Bachelor's degree. (1) Includes level IV.	Supervision/Human Relations Individual and Organizational Behavior Employee Behavior and Assessment Program Evaluation and Corrective Action Assessing Employee Performance	Do front-end analysis and research. Analyze data and translate into program design. Write proposals. Arrange and conduct staff continuing training. Evaluate instructional designs and vendor products.
Instructor Instructional Developer	LEVEL IV	A. Works under the direction of a senior/experienced trainer or supervisor. Provides formal classroom instruction to employees from various departments. Develops course work and instructional materials. B. Teaching/training knowledge background includes courses with such titles as "Methods of Teaching Adults," "Occupational Analysis," "Course Construction," "Learning Theory," and the like. A fairly heavy dose of both "how to" and "why" with the "why" being accepted as essential. Includes Level III.	Methods of Occupational Training Occupational Analysis and Course Construction (Front-end analysis) Analysis and Design Instructional Development	Use competency-based models and various assessment techniques. Evaluate learning objectives and multi-media materials. Utilize SAT and vendor materials.
Trainer/Lecturer	LEVEL III	A. An individual who works full-time or part-time in training. Primarily a subject matter expert working as a classroom trainer using instructional materials and strategies developed by others. B. Training preparation: Instructional methods, learning theory. Overview of course development. Includes Level II	Instructor Training	Implement group interaction methods. Classroom teaching techniques. Train and test using materials prepared by others.
Foreman/Supervisor	LEVEL II	A. Supervisor or foreman who is expected to regularly indoctrinate new employees in organization expectations, and, on occasion, to update and provide information in semiformal department meetings and conduct job-specific training. Occasionally asked to provide information about his/her department to employees of other departments in a rather formal setting. B. The 'Instructor Training" course plus appropriate material covering information on andragogy, front-end results analysis, and developing learning materials. More "how-to" information, but including some "why." Includes Level I.	Instructor Training	Use group interaction methods, select strategies to meet learning needs, use elements of performance based training to develop an instructional program. Use AV equipment.
Mechanic Equipment Operator Word Processor Electronic Technician	LEVEL I	A. A subject matter expert working as an OJT instructor, using materials developed by others, who conducts on-the-job training and employee performance testing. B. Would benefit from a trainer course, i.e., "OJT Instructor Training." A course that deals with the "how to" rather than the "why," one-on-one instructional methods, and performance testing.	OJT Instructor Training	Use effective learning concepts. Demonstrate a job skill. Conduct performance tests.

(1) Specialized experience and education may be submitted on an individual basis.

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APPENDIX B

EXAMPLE JOB ANALYSIS SURVEY FORM

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EXAMPLE JOB ANALYSIS SURVEY FORM

The attached survey contains eleven duty areas with supporting task statements. The initial duty areas and task statements were obtained from a generic task listing for nuclear instructors developed by the Mid-Atlantic Nuclear Training Group (MANTG) after they surveyed 179 instructors at 14 commercial reactor utility sites concerning instructor job requirements. The list was then reviewed by five instructors and revised to reflect the perceived job requirements for instructors. The results of this survey may be used to verify and/or modify existing initial and continuing instructor training program.

Before filling out the attached survey forms, please answer the following questions. These answers will be used to establish a local data base for the survey.

1.   Number of years of practical experience related to your field of training _____.
2.   Number of years as an instructor in the this organization _____.
3.   List the positions you have held (e.g., SRO, SS, maintenance foreman, etc.) and your educational background.

_____

_____

_____

_____

_____

Instructions for filling out the survey form:

1.   You are asked three questions on each task and are asked to rate each question on a
       scale of 1 to 5. The explanation of each rating is given on the next page.

2.   Should you encounter a task that doesn't apply to your present position, write N/A in
       the space for the difficulty rating.

3.   Please answer all task questions as thoroughly as possible.

DEFINITIONS OF SURVEY CRITERIA SCALES

DIFFICULTY OF PERFORMANCE

First, decide if the task performance requires a high, medium, or low degree of mental activity. A high mental activity rating will use either "5" or "4," medium, a "3"; and low, a "2" or "1." The amount of motor coordination required will resolve using "5" or "4" and "2" or "1" (a medium mental activity uses a rating of "3" irrespective of motor coordination).

Min. 1. "Low" mental activity and "low" motor coordination are required.

2. "Low" mental activity and "high" motor coordination are required.

3. "Medium" mental activity is required (irrespective of the degree of motor coordination needed).

4. "High mental activity and "low" motor coordination are required.

Max. 5. "High" mental activity and "high" motor coordination are required.

TASK IMPORTANCE

Min. 1. Consequences of improper performance are "negligible" (for example, improper performance could affect personnel training, but with no significant consequence).

2. Consequences of improper performance are "undesirable" (for example, improper training may result).

3. Consequences of improper performance are "serious" (for example, improper training may result in generation of an occurrence report).

4. Consequences of improper performance are "severe" (for example, improper training may result in an alert event).

Max. 5. Consequences of improper performance are "extremely severe" (for example, improper training may result in a site or general emergency event).

FREQUENCY

Min.   1.   "Less than once per year."

2.   "Annually/semiannually (6-12 months)."

3.   "Monthly/quarterly (4 weeks-3 months)."

4.   "Weekly/bi-weekly (1-2 weeks)."

Max. 5.   "Daily (or more frequently than once per week)."

JOB ANALYSIS
INSTRUCTOR

Key - Arabic Numeral, i.e., 3 = Duty area
- Arabic Numeral W/Decimal, i.e., 3.8 = Tasks relating to duty area

	Difficulty	Importance	Frequency
1 - ANALYZE TRAINING NEEDS			
1.1 Conduct a needs analysis	____	____	____
1.2 Conduct job analysis	____	____	____
1.3 Interpret job analysis data	____	____	____
1.4 Revise/modify existing job analysis	____	____	____
1.5 Conduct a task analysis	____	____	____
1.6 Interpret task analysis data	____	____	____
1.7 Revise/modify existing task analysis	____	____	____
1.8 Evaluate requests for training	____	____	____
1.9 Develop questionnaires to determine student and management needs	____	____	____
1.10 Analyze student and management questionnaires	____	____	____
2 - CONDUCTING TRAINING			
2.1 Prepare instructional setting	____	____	____
2.2 Review lesson plan	____	____	____
2.3 Schedule resources and facilities	____	____	____
2.4 Verify training schedule	____	____	____
2.5 Verify training equipment is operable	____	____	____
2.6 Administer diagnostic test	____	____	____
2.7 Evaluate diagnostic test results	____	____	____
2.8 Use instructor guide	____	____	____
2.9 Conduct plant walk-throughs and field trips	____	____	____
2.10 Perform demonstrations	____	____	____
2.11 Conduct lab sessions	____	____	____
2.12 Conduct lecture	____	____	____
2.13 Conduct discussion	____	____	____
2.14 Conduct seminars	____	____	____
2.15 Conduct role-playing exercises	____	____	____
2.16 Conduct hands-on exercises	____	____	____
2.17 Apply case studies	____	____	____
2.18 Use a flip chart	____	____	____
2.19 Use a videotape	____	____	____
2.20 Use a black (white) board	____	____	____
2.21 Use slides	____	____	____
2.22 Use transparencies	____	____	____
2.23 Question trainees orally during lesson to determine their progress	____	____	____
2.24 Respond to trainee questions	____	____	____

2 - CONDUCTING TRAINING (cont)	Difficulty	Importance	Frequency
2.25 Monitor computer based training	____	____	____
2.26 Team teach with other instructors	____	____	____
2.27 Monitor/facilitate independent study activities	____	____	____
2.28 Monitor/facilitate individualized instruction	____	____	____
2.29 Conduct training for on-the-job training evaluator	____	____	____
2.30 Supervise on-the-job training	____	____	____
2.31 Administer quizzes periodically to determine trainee progress	____	____	____
2.32 Administer written exam	____	____	____
2.33 Administer oral exam	____	____	____
2.34 Administer performance test	____	____	____
2.35 Proctor written exam	____	____	____
2.36 Gather feedback from trainees on effectiveness of training	____	____	____
2.37 Assess your own training session	____	____	____
2.38 Tutor trainees	____	____	____
2.39 Conduct training programs for outside agencies	____	____	____
2.40 Recognize and respond to disruptive trainee behavior	____	____	____

3 - DESIGNING TRAINING

	Difficulty	Importance	Frequency
3.1 Plan/organize a training documentation tracking system	____	____	____
3.2 Develop a work plan for training program development	____	____	____
3.3 Function as a program/curriculum development team member	____	____	____
3.4 Function as a program/curriculum development project coordinator	____	____	____
3.5 Coordinate a training program	____	____	____
3.6 Apply adult learning theory and instructional principles to develop mentor training program	____	____	____
3.7 Construct learning objectives	____	____	____
3.8 Modify existing learning objectives	____	____	____
3.9 Sequence learning objectives	____	____	____
3.10 Choose training method	____	____	____
3.11 Determine instructional setting	____	____	____
3.12 Modify existing training methods	____	____	____
3.13 Modify existing training materials	____	____	____
3.14 Modify existing lesson plans	____	____	____
3.15 Modify existing exam questions	____	____	____
3.16 Choose type of media and supplies to be used	____	____	____
3.17 Review existing (packaged) training programs for applicability	____	____	____

4 - DEVELOPING TRAINING	Difficulty	Importance	Frequency
4.1 Develop course content outline	_____	_____	_____
4.2 Develop study activities	_____	_____	_____
4.3 Develop OJT checklist or qual card	_____	_____	_____
4.4 Modify existing trainee text	_____	_____	_____
4.5 Write trainee text	_____	_____	_____
4.6 Modify existing trainee workbook/exercise guides	_____	_____	_____
4.7 Develop trainee/exercise guides	_____	_____	_____
4.8 Modify existing trainee handouts	_____	_____	_____
4.9 Develop trainee handouts	_____	_____	_____
4.10 Modify existing A-V materials	_____	_____	_____
4.11 Develop flipcharts	_____	_____	_____
4.12 Develop transparencies	_____	_____	_____
4.13 Develop slides	_____	_____	_____
4.14 Develop diagnostic tests	_____	_____	_____
4.15 Develop an evaluation plan for training programs	_____	_____	_____
4.16 Develop hands-on/practical exercises	_____	_____	_____
4.17 Develop standards for performance tests	_____	_____	_____
4.18 Write performance test items	_____	_____	_____
4.19 Write multiple choice test items	_____	_____	_____
4.20 Write matching test items	_____	_____	_____
4.21 Write completion test items	_____	_____	_____
4.22 Write essay test items	_____	_____	_____
4.23 Write oral test items	_____	_____	_____
4.24 Write test instructions	_____	_____	_____
4.25 Develop test answer keys	_____	_____	_____
4.26 Develop a test specification matrix	_____	_____	_____
4.27 Develop a training standard document	_____	_____	_____
4.28 Develop a training matrix	_____	_____	_____
4.29 Perform pilot session using draft training materials	_____	_____	_____
4.30 Revise draft training materials based on pilot session feedback	_____	_____	_____
4.31 Write lesson plans for classroom setting	_____	_____	_____
4.32 Write OJT guides for OJT setting	_____	_____	_____
4.33 Develop computer based training	_____	_____	_____
4.34 Write a program description	_____	_____	_____
4.35 Coordinate vendor training	_____	_____	_____
4.36 Produce video tape presentations	_____	_____	_____

5 - EVALUATING TRAINING	Difficulty	Importance	Frequency
5.1 Grade trainee quizzes/exams	____	____	____
5.2 Review exam results with trainees	____	____	____
5.3 Analyze trainee exam results	____	____	____
5.4 Analyze post-training feedback from program graduates	____	____	____
5.5 Analyze post-training feedback from program instructors	____	____	____
5.6 Analyze post-training feedback from supervisors/managers	____	____	____
5.7 Evaluate effectiveness of training equipment	____	____	____
5.8 Evaluate effectiveness of training materials	____	____	____
5.9 Revise training materials based on evaluation results	____	____	____
5.10 Evaluate effectiveness of training methods	____	____	____
5.11 Revise training methods based on evaluation results	____	____	____
5.12 Evaluate other instructors	____	____	____
5.13 Evaluate vendor training	____	____	____
5.14 Evaluate incoming plant modifications to determine potential effect on training programs	____	____	____
5.15 Participate in writing an accreditation self evaluation report	____	____	____
5.16 Conduct a course evaluation	____	____	____
5.17 Conduct a program evaluation	____	____	____
5.18 Analyze personnel performance problems in-plant	____	____	____
5.19 Analyze procedural problems in-plant	____	____	____
5.20 Analyze equipment problems in-plant	____	____	____
5.21 Conduct item analysis/test analysis on exam questions	____	____	____

6 - MAINTAINING INSTRUCTOR PROFICIENCY AND CERTIFICATION			
6.1 Attend internal and external seminars and conferences for personal/professional development	____	____	____
6.2 Maintain current knowledge of technical instructional development	____	____	____
6.3 Review changes in training related administrative procedures	____	____	____
6.4 Participate in periodic in-plant observation sessions	____	____	____
6.5 Read/review training articles	____	____	____
6.6 Communicate effectively through speech	____	____	____
6.7 Communicate effectively through writing	____	____	____
6.8 Communicate effectively by listening	____	____	____
6.9 Maintain current knowledge of plant modifications	____	____	____
6.10 Interpret bargaining unit agreements	____	____	____
6.11 Maintain/update instructor qualification records	____	____	____
6.12 Maintain membership in professional organizations	____	____	____

7 - OPERATING THE SIMULATOR	Difficulty	Importance	Frequency
7.1 Develop team-oriented learning objectives	____	____	____
7.2 Select simulator scenarios for training from an existing inventory	____	____	____
7.3 Determine plant/simulator differences	____	____	____
7.4 Determine simulator limitations	____	____	____
7.5 Construct a scenario content outline	____	____	____
7.6 Develop scenarios	____	____	____
7.7 Test or dry-run scenarios	____	____	____
7.8 Test simulator modifications	____	____	____
7.9 Validate procedures on the simulator	____	____	____
7.10 Perform daily operations readiness procedures	____	____	____
7.11 Power-up the simulator complex	____	____	____
7.12 Initialize the simulator for training	____	____	____
7.13 Brief trainees prior to a simulator session	____	____	____
7.14 Conduct exercise preview	____	____	____
7.15 Direct and guide drill exercise	____	____	____
7.16 Operate the instructor control console	____	____	____
7.17 Operate remote instructor controls	____	____	____
7.18 Perform restart/recover procedure	____	____	____
7.19 Perform shutdown procedure	____	____	____
7.20 Secure the simulator complex	____	____	____
7.21 Collect data for evaluation/critique	____	____	____
7.22 Evaluate trainees visual awareness while operating simulator	____	____	____
7.23 Evaluate individual crew member performance	____	____	____
7.24 Evaluate crew/team performance	____	____	____
7.25 Evaluate individuals/crews integrated plant operations knowledge level	____	____	____
7.26 Evaluate scenario effectiveness	____	____	____
7.27 Facilitate trainee critique of drill exercise	____	____	____
7.28 Conduct and reinforce team skill training	____	____	____
7.29 Maintain individual reactivity manipulation completion cards	____	____	____
7.30 Maintain operations requalification records	____	____	____
7.31 Maintain simulator records	____	____	____
7.32 Write up a simulator problem report	____	____	____
7.33 Provide procedure/design feedback to engineering	____	____	____
7.34 Evaluate simulator vs plant fidelity	____	____	____

8 - OPERATING TRAINING SUPPORT EQUIPMENT	Difficulty	Importance	Frequency
8.1 Operate a video camera	_____	_____	_____
8.2 Operate a video recorder	_____	_____	_____
8.3 Operate a movie projector	_____	_____	_____
8.4 Operate a slide projector	_____	_____	_____
8.5 Operate a lettering machine	_____	_____	_____
8.6 Operate computer terminal and employ necessary software	_____	_____	_____

9 - PERFORMING ADMINISTRATIVE TASKS

9.1 Maintain/update trainee attendance records	_____	_____	_____
9.2 Maintain/update trainee grades and exam scores	_____	_____	_____
9.3 Maintain/update program development files	_____	_____	_____
9.4 Maintain/update training documentation tracking system	_____	_____	_____
9.5 Prepare a budget	_____	_____	_____
9.6 Requisition materials and supplies and review upon receipt	_____	_____	_____
9.7 Attend training meetings	_____	_____	_____
9.8 Interpret training procedures	_____	_____	_____
9.9 Maintain knowledge of appropriate company/plant policies and procedures	_____	_____	_____
9.10 Interpret regulations or rules promulgated by Federal or state agencies for training requirements	_____	_____	_____
9.11 Schedule classes	_____	_____	_____
9.12 Appraise managers and supervisors of training concerns	_____	_____	_____
9.13 Notify instructors and supervisors of new training programs	_____	_____	_____
9.14 Utilize reference library resources	_____	_____	_____
9.15 Write memos/letters/reports	_____	_____	_____
9.16 Maintain/update task-to-training matrix	_____	_____	_____
9.17 Prepare and submit company required documentation	_____	_____	_____
9.18 Initiate waivers for training	_____	_____	_____
9.19 Review company/plant procedures for changes	_____	_____	_____
9.20 Review industry information from regulatory sources	_____	_____	_____
9.21 Review industry information from other facilities	_____	_____	_____

	Difficulty	Importance	Frequency
10 - PROVIDING COUNSELING			
10.1 Counsel trainees concerning training related problems	____	____	____
10.2 Counsel trainees in career planning	____	____	____
10.3 Discuss trainee performance with trainee	____	____	____
10.4 Provide remedial training materials to trainees	____	____	____
11 - UNDERSTANDING ORGANIZATIONAL RELATIONSHIP			
11.1 Establish and maintain positive working relationships with line supervision	____	____	____
11.2 Establish and maintain a positive working relationship with instructional staff	____	____	____
11.3 Facilitate changing policies and procedures	____	____	____
11.4 Make formal presentations to management of plans for training and development of programs and projects	____	____	____
11.5 Write memos and announcements about training activities	____	____	____
11.6 Establish rapport and credibility with key personnel in the organization	____	____	____
11.7 Use knowledge of company/plant organizational structure	____	____	____
11.8 Understand how training relates to other company/plant functions	____	____	____

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APPENDIX C

INSTRUCTIONAL BASICS

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INSTRUCTIONAL BASICS

The following list of representative competencies should be reviewed for applicability to a facility's instructional basics training program. Competencies that are omitted should be evaluated for inclusion in other instructor training programs. Those competencies that apply should be converted to facility-specific terminal and enabling learning objectives. Once in the learning objective format, training and evaluation tools may be designed. An instructional basics course should develop the following representative competencies:

- Fundamentals of Systematic Approach to Training
    - define "systematic approach to training" (SAT)
    - define the purpose and basic output of each of the five phases of SAT
    - describe how a systematic approach to training has been implemented at the facility
    - describe the facility's training program evaluation process
- Training Program Administration
    - discuss the purpose and content of a training development and administrative guide
    - discuss the purpose and content of the facility's training management manual
    - discuss facility administrative policies and procedures related to training
    - explain how to utilize the facilities, equipment, and services that support training at the facility
    - discuss procedures for the requisition of materials and supplies
    - demonstrate an ability to utilize the training department reference library resources
- The Role of the Instructor
    - describe the attributes of a competent instructor
    - discuss the importance of the desire to teach
    - discuss the relationships between instructors and adult trainees
    - explain why instructor resourcefulness and creativity are needed
    - explain the instructor's role in the total training effort
    - differentiate between entry-level technical qualifications and developmental/instructional qualifications for instructors
    - discuss the need to advise training supervisors/managers of training concerns

- discuss ethical and integrity issues related to training

- explain the instructor's role in promoting professionalism (including reinforcement of facility codes of conduct)

- explain the instructor's role in reinforcing facility standards

- briefly describe the programs for qualification and requalification of all facility instructors

- discuss the continuing training programs for facility instructors

- Records Management

  - discuss the reason for and uses of training records

  - discuss the types of training records to be maintained

  - discuss records management procedures (local and DOE)

  - discuss the maintenance and storage requirements for training records

  - discuss the legal aspects of access to training records

  - discuss the need to develop/administer a training documentation/tracking system

- Industry Operating Experience

  - discuss the facility and industry information sources

  - explain the process(es) used to incorporate industry and facility operating experience into training

  - discuss the purpose and benefits of incorporating facility and industry operating experience into facility training programs

- Questioning Techniques

  - discuss the purposes of questioning

  - explain the benefits of questioning

  - explain the benefits of designing comprehension-checking questions into lesson plans/OJT guides

  - discuss and develop at least one of the following types of questions

    -- open-ended

    -- closed-ended

    -- leading

    -- rhetorical

  - explain how and when to ask the different types of questions

  - discuss the possible methods of interpreting and responding to trainee responses

- Determining Entry Levels of Incoming Trainees

    - define "entry-level requirements"

    - discuss techniques for assessing a trainee's academic and technical deficiencies and strengths

    - explain how a trainee may receive an exception to training requirements based on this assessment

    - discuss the methods by which trainees may be remediated if they do not meet entry-level requirements

- Learning Objectives

    - define "learning objective"

    - explain the relationship between a task statement and a terminal objective

    - describe the two types or levels of learning objectives (terminal and enabling) and discuss their relationship

    - discuss the three component parts of a learning objective

    - discuss the reasons for each of the three components

    - discuss the need to accurately determine the correct level of learning required (knowledge, application, synthesis, etc.) and the need to develop learning objectives that assess mastery of that level of learning

    - develop a learning objective that contains the three components

    - discuss the reasons for sequencing learning objectives

- Principles of Adult Learning and Motivation

    - explain how adults learn

    - discuss the importance of a trainee meeting or exceeding entry-level requirements/prerequisites with regard to learning and motivation

    - describe the common characteristics of adult learners

    - describe the motivational and disciplinary factors that affect learning

    - explain the different approaches to learning

    - discuss the effects of various teaching styles and their impact on trainee learning

    - discuss speech techniques the instructor may employ and their effect on student learning

    - discuss the importance of proper instructional pacing

- Lesson Plans/Guides

    - define "lesson plan"

- describe the reasons for utilizing a lesson plan/guide to conduct classroom and OJT instruction
- discuss the use of a lesson plan/guide during classroom and OJT instruction
- describe the component parts of a lesson plan
- discuss the importance of the "dry run" for new training material
- discuss the need for management review and approval (training and target group) of lesson plans and OJT guides
- explain why procedural/equipment/facility changes should be incorporated into lesson plans
- discuss the need for modifying lesson plans based on trainee/program evaluation

- Instructional Materials and Media
  - discuss the need for instructional materials and media
  - list the types of instructional materials and media utilized in the facility
  - explain the role of instructional materials and media in the instructional process
  - describe the relationship of materials and media to the instructional situation
  - describe the characteristics of effective instructional materials and media
  - review and discuss examples of instructional materials and media
  - discuss the need for specifications/standards for facility training materials
  - discuss the methods used to select appropriate instructional materials and media to support a classroom lesson

- Trainee Stress/Stress Management
  - define "trainee stress"
  - explain how trainee stress may result in social/behavior problems
  - discuss the symptoms of stress
  - describe the instructor's role in dealing with stress problems
  - discuss the legal implications of an instructor's personal involvement or non-involvement.

APPENDIX D

ON-THE-JOB TRAINING (OJT) INSTRUCTOR TRAINING

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ON-THE-JOB TRAINING (OJT) INSTRUCTOR TRAINING

The following list of representative competencies should be reviewed for applicability to a facility's OJT instructor training program. Competencies that are omitted should be evaluated for inclusion in other instructor training programs. Those competencies that apply should be converted to facility-specific terminal and enabling learning objectives. Once in the learning objective format, training and evaluation tools may be designed. An OJT instructor training course should develop the following representative competencies:

- On-the-Job Training

    General

    - define "on-the-job training"
    - explain how OJT differs from "job experience"
    - discuss the relationship of OJT to other instructional methods or training settings
    - discuss the advantages and disadvantages of OJT
    - discuss methods by which disadvantages may be minimized or eliminated
    - discuss the planning of a performance-based OJT program
    - discuss the need for monitoring a student's progress during enrollment in an OJT program

    Training Portion of OJT

    - describe the "training portion" of the OJT process
    - discuss the reasons for and the process by which the OJT instructor may "tailor" an OJT lesson to an individual trainee based on the trainee's knowledge and skills at the start of the lesson (trainees that can perform some/all of the learning objective don't need to be "taught" what they already know)
    - review trainee records to determine completion of prerequisite training
    - conduct on-the-job training using approved materials
    - demonstrate use of the summary process for reinforcing trainee understanding
    - conduct an evaluation of another instructor's OJT lesson delivery

Evaluation Portion of OJT

- define "performance test" (may also be referred to as a "practical factor")

- describe the purpose of a performance test

- explain why and how knowledge and skill(s) are assessed during a performance test

- discuss the performance test levels of accomplishment (Perform, Simulate, Observe, and Discuss)

- explain how the content of a performance test is determined and subsequently controlled

- develop a training standard to control the content of a performance test

- discuss the contents of an OJT Checklist (also called Qualification Card), including the guidance that should be provided for the trainee and the OJT instructor

- discuss the development of an OJT checklist

- discuss how performance tests are conducted when several levels of accomplishment are specified on the OJT checklist, i.e., perform/simulate

- describe the OJT performance test process including requirements to document level of accomplishment

- discuss the techniques utilized to assess knowledge during a performance test

- discuss techniques utilized by the OJT instructor to critique trainee performance

- conduct a performance test using an approved evaluation standard

- evaluate an OJT instructor administering a performance test

• Records Management

- discuss the importance of maintaining adequate OJT program records

- describe the OJT instructor's responsibilities with regard to the documentation of training and evaluation of employees

- discuss the process used to document on-the-job training and performance testing processes

• The OJT Instructor

- describe the attributes of a competent OJT instructor

- discuss the entry-level technical qualifications for OJT instructors

- explain the need for OJT instructors to develop and demonstrate professional skills/attitudes at all times when dealing with trainees

- discuss the importance of the OJT instructor working closely with instructional technologists to identify required content, resources, and constraints for proposed training

- discuss the importance of advising a trainee's supervisor or manager of training concerns

- explain why resourcefulness and creativity on the part of an OJT instructor are necessary

- explain the OJT instructor's role in the total training effort

- Learning Objectives

  - discuss how the sequencing of learning objectives may affect student learning

  - explain how learning objectives are utilized in OJT programs

  - develop a learning objective containing the three component parts

- Principles of Adult Learning and Motivation

  - discuss the factors which are under an instructors control that affect learning and motivation during OJT

  - demonstrate techniques that promote learning and motivation of learners

- OJT Guides

  - define "OJT guide"

  - explain how OJT guides differ from classroom lesson plans

  - describe the reasons for utilizing an OJT guide to conduct OJT

  - develop an OJT guide that is based on a terminal objective using the concepts of adult learning and motivation

  - explain why it is not usually possible to assign fixed time allotments to OJT topics

- Qualification of Trainees

  - describe the evaluation processes which may be utilized to qualify a trainee at the completion of a training program (comprehensive written examinations, operational evaluation with a first-line supervisor, oral board, etc.).

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APPENDIX E

CLASSROOM INSTRUCTOR/TRAINER TRAINING

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CLASSROOM INSTRUCTOR/TRAINER TRAINING

The following list of representative competencies should be reviewed for applicability to a facility's classroom instructor training program. Competencies that are omitted should be evaluated for inclusion in other instructor training programs. Those competencies that apply should be converted to facility-specific terminal and enabling learning objectives. Once in the learning objective format, training and evaluation tools may be designed. A classroom instructor training course should develop the following representative competencies:

- Principles of Adult Learning and Motivation
    - discuss the factors under an instructor's control that affect learning during classroom instruction
    - demonstrate techniques that promote learning and motivation of learners
- Classroom Instructional Methods
    - discuss the advantages of providing a proper learning environment
    - discuss the following with regard to physical seating arrangements
        -- types of seating arrangements and advantages and/or disadvantages of each
        -- the importance of matching seating arrangements to learning objectives and the instructional method(s)
    - discuss the advantages and disadvantages of the lecture method
    - briefly discuss the instructor's role in the following instructional methods which may be used to supplement or support the lecture method
        -- role-play
        -- case studies
        -- exercises (games)
        -- discussions
        -- practical classroom demonstrations
        -- tutoring by instructors or peers
    - facilitate/conduct examples of each of the above instructional methods
    - discuss the techniques a classroom instructor may employ when responding to trainee questions
    - demonstrate proper techniques for control of the class

- describe techniques the classroom instructor may utilize to optimize student learning

- discuss methods an instructor may utilize to deal with difficult students

- conduct classroom training using approved materials

- demonstrate effective training techniques

- demonstrate use of audience feedback and questioning techniques

- respond appropriately to trainee questions

- discuss uses of audio/visual aids

- demonstrate use of audio/visual aids

- demonstrate use of the summary process for reinforcing understanding

- conduct an evaluation of a lesson presented by another instructor

- The Classroom Instructor

  - discuss the entry-level technical qualifications for classroom instructors

  - explain the need for classroom instructors to develop and demonstrate professional skills/attitudes at all times when dealing with trainees

  - discuss the importance of the classroom instructor and the SME working closely with instructional technologists to identify content, resources, and constraints for proposed training

- Lesson Plans

  - develop a lesson plan based on a terminal learning objective by applying concepts of adult learning and motivation to lesson development

- Learning Objectives

  - develop a learning objective containing the three components

  - discuss how training settings are selected based on the task statement's action verb

  - group example learning objectives by training setting

  - discuss the relationships that affect sequencing of learning objectives

  - sequence example learning objectives

  - discuss how sequencing learning objectives affects student learning

  - explain how learning objectives are utilized in training programs

- Instructional Materials and Media

  - discuss the methods used to select appropriate instructional materials and media to support a classroom lesson

  - select appropriate audio/visual/instructional aids

- explain how to procure training equipment, mockups, models, and training aids
- demonstrate the correct use of instructional materials and media

● Training Program Evaluation

- describe the purpose of training program evaluation
- discuss the methods used to evaluate training effectiveness at the individual trainee and program levels
- discuss the content of forms that monitor student reaction to training
- discuss how trainee reaction forms are utilized for program modifications
- discuss how post-training feedback from trainees and their supervisors are utilized to refine training programs
- discuss how records of trainee performance may be used as a basis for training program modification

● Written Examinations and Test Item Development

- discuss the purpose(s) of testing
- list the types of commonly used measuring instruments
- explain why tests should be based on learning objectives
- discuss the types and uses of test items (questions)
- discuss the advantages/disadvantages of each test item format
- discuss why the selection of test item format should be based on the learning objective's action verb
- discuss how test items are developed and the reason(s) for references, an answer key (which includes directions for partial credit for grading essay questions), assigning item point values, establishing conditions, and specifying criteria
- develop at least one example of each test item type
- evaluate and discuss example test items
- discuss the need for the development of test specifications to create written examinations
- define "validity" and "reliability"
- discuss the need for validity and reliability of test items and examinations
- discuss the reason(s) why an instructor should proctor all written examinations
- discuss facility policy regarding cheating on examinations
- discuss facility policy regarding the reuse of written examinations (considering examination compromise)

- discuss the use of test item banks (either computerized or on paper) to generate examinations

- discuss methods to reduce subjectivity and ensure uniformity when grading essay questions

- discuss the reasons for reviewing examinations with trainees

- Trainee Stress/Stress Management

 - describe symptoms that may identify the need for counseling

 - arrange a counseling session

 - demonstrate counseling through role-play utilizing individual and small group counseling techniques

 - utilize techniques to summarize and end a counseling session

- Qualification of Trainees

 - describe the evaluation processes which may be utilized to qualify a trainee at the completion of a training program (comprehensive written examinations, operational evaluation with a first-line supervisor, oral board, etc.).

APPENDIX F

INSTRUCTIONAL TECHNOLOGIST TRAINING

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INSTRUCTIONAL TECHNOLOGIST TRAINING

The following list of representative competencies should be reviewed for applicability to a facility's instructional technologist training program. Those competencies that apply should be converted to facility-specific terminal and enabling learning objectives. Once in the learning objective format, training and evaluation tools may be designed. An instructional technologist training course should develop the following representative competencies:

- Determining the Entry Level of Incoming Trainees
    - discuss the uses of previous trainee entry-level test results
    - design entry-level tests
    - develop a remedial training program based on a trainee's entry-level test results
    - establish expected entry-level skills and knowledge for a training program
- Training Settings and Instructional Methods
    - describe the training settings available at the facility
        -- classroom
        -- laboratory
        -- on-the-job training
        -- self-paced instruction (SPI)
        -- simulator
    - describe the advantages/disadvantages of each setting
    - discuss the following instructional methods and when they should be used to support/substitute for the lecture method
        -- role-play
        -- case studies
        -- exercises (games)
        -- discussions
        -- practical classroom demonstrations
        -- tutoring by instructor or peers
    - develop and conduct/facilitate examples of each of the above instructional methods
    - with regard to the SPI training setting:
        -- discuss the principles of SPI
        -- explain the types of SPI instructional methods

- -- explain the relationship of SPI to other instructional methods

- -- explain the role of the instructor during SPI

- -- conduct an evaluation of SPI

- laboratory training setting (if utilized at the facility)

- -- describe the laboratory training setting (not to be confused with OJT conducted in a facility chemical laboratory)

- -- explain the benefits of conducting training in the laboratory setting

- -- discuss the procedures an instructor should follow to establish a safe training environment

- -- discuss the problems a laboratory instructor may encounter in controlling a class in this training setting

- -- describe techniques to optimize learning in this setting

- -- develop a lesson plan for a laboratory training session

- -- conduct a laboratory training session

- -- describe the techniques assess trainee learning in this setting

- -- evaluate a laboratory training session

- **Learning Objectives**

- discuss the importance of applying entry-level requirements to development of objectives

- discuss the need to accurately determine the correct level of learning required (knowledge, application, synthesis, etc.) and the need to develop learning objectives that assess mastery of that level of learning

- develop terminal objectives based on an actual task list

- develop a series of enabling objectives that support the achievement of a terminal objective

- group learning objectives by training setting

- sequence learning objectives

- **Instructional Materials and Media**

- discuss the importance of working closely with subject matter experts to identify content, resources, and constraints for proposed training

- develop examples of instructional materials and media (student workbook, exercise guide, handouts, study guides, OJT checklists, OJT guides, classroom lesson plans, transparencies, video tapes, etc.)

- develop specifications/standards for facility training materials and media

- Training Program Evaluation

    - develop forms necessary to monitor student reaction to training

    - develop forms necessary to obtain supervisor feedback

    - incorporate procedural/equipment/facility changes into training

    - incorporate facility/industry operating experience into training program

    - discuss the need to systematically initiate, document, and incorporate changes into training

    - discuss different techniques for evaluating training programs.

- Records Management

    - develop trainee and program training record forms

    - demonstrate use of these forms

- Design of Systematic Approaches to Training

    - analysis phase

        -- define "needs analysis"

        -- describe the processes utilized to conduct training needs analysis (individual and organizational)

        -- describe why training specified in DOE Orders bypasses the needs analysis process

        -- conduct a needs analysis using the appropriate personnel

        -- define "job analysis"

        -- discuss the need for performing a job analysis

        -- describe the use(s) of job analysis data

        -- develop job analysis data collection packages

        -- conduct a job analysis and develop a task list

        -- revise/modify an existing job analysis

        -- interpret job analysis data

        -- validate the task list

        -- discuss the need for maintaining a task-to-training matrix which includes train, no train, and overtrain tasks

        -- select job tasks for training

        -- define "task analysis"

        -- discuss the task analysis process

        -- explain the uses of task analysis data

        -- list the benefits of the task analysis

- -- conduct task analysis to determine skills and knowledge

- -- interpret task analysis data

- design phase

  - -- describe why training settings are usually determined prior to the development of learning objectives

  - -- determine appropriate training settings based on task statements

  - -- develop terminal objectives based on tasks selected for training

  - -- define "training/evaluation standard" (TES)

  - -- develop a TES for a task

  - -- develop enabling objectives to support terminal objectives

  - -- sequence learning objectives

  - -- define "performance test"

  - -- develop performance tests

  - -- discuss the need to establish expected trainee entry-level knowledge and skills in this phase of the SAT process

  - -- discuss why enabling objectives are developed in this phase of the SAT process

  - -- describe why test items are developed during the design phase

  - -- select/coordinate/evaluate training vendor services

- development phase

  - -- determine the most appropriate instructional method(s) based on the learning objectives

  - -- select appropriate lesson plan/guide format

  - -- describe the process by which lesson plan content and instructor/trainee activities are determined

  - -- select the subject matter content for a unit of study

  - -- develop example instructional materials necessary to conduct a training session

  - -- conduct a "dry-run" of training materials following development

- implementation phase

  - -- discuss the need to pre-test trainees entering the training program

  - -- describe the preparations an instructor should make prior to conducting training

  - -- discuss the need to monitor and evaluate trainees performance as they progress through the training program

      --   discuss the purpose of an in-training evaluation program

      --   describe the conduct of an in-training evaluation program including potential sources of feedback

      --   describe the record(s) that should be maintained to document completion of training sessions and the program

-     evaluation phase

      --   describe the three major activities that take place during the evaluation phase

      --   list the indicators of training system/program performance and changing training needs that should be monitored

      --   design example evaluation tools

      --   describe the process(s) by which information collected during the evaluation phase is analyzed

      --   evaluate example training evaluation materials and make material revision recommendations

      --   describe how the process known as "root cause analysis" may be utilized to identify training deficiencies

      --   discuss the review and approval process required for training program modifications

- **Qualification of Trainees**

  - plan, implement, and manage an evaluation process which may be utilized to qualify a trainee at the completion of a training program (comprehensive written examination, performance demonstration, operational evaluation, oral board, etc.), as specified by the facility training program manual

  - define performance demonstration

  - define operational evaluation (facility walk-through)

  - describe the purpose of an operational evaluation

  - explain how an operational evaluation is conducted

  - describe how the content of an operational evaluation is determined and controlled

  - discuss how operational evaluations are documented

  - develop test specifications to create written and oral examinations

  - select appropriate examination/evaluation methods

  - select appropriate test item formats

- evaluate test items for validity and reliability

- evaluate examinations for validity and reliability

- prepare and administer written examinations

- discuss how test item statistics may be utilized to evaluate the quality (validity and reliability) of test items and the learning objectives or training on which they are based

- discuss the need to document questions asked during oral examinations and the examiner's overall evaluation of trainee responses

- prepare and administer oral examinations

- develop, maintain, and control an examination bank

- discuss the development of written and oral examinations, and operational evaluations for trainees who have failed an initial examination/evaluation (including the maximum allowable percentage of questions from their original examination/evaluation)

- Instructor Training/Continuing Training Programs
  - develop/utilize a network of professional organizations and resources
  - develop programs for qualification of all facility instructors (instructional and technical as needed)
  - develop continuing instructional training programs for instructors
  - develop continuing technical training for instructors.

CONCLUDING MATERIAL

Review Activity:		**Preparing Activity:**
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